Commonwealth of Kentucky
Division for Air Quality

RESPONSE TO COMMENTS

TITLE V PROPOSED PERMIT NO. V-06-053
AMERICAN ELECTRIC POWER
BIG SANDY POWER PLANT
LOUISA, KY
APRIL 5, 2007
MARTHA M. ALLMAN, REVIEWER

SOURCE PLANT I.D. #:	21-127-00003
SOURCE A.I. #:	2610
ACTIVITY APPLICATION LOG #:	APE20040001

SOURCE DESCRIPTION:

A renewal Title V operating permit application was received on June 17, 2004 from American Electric Power (AEP) for its Big Sandy Power Plant located near Louisa, Kentucky in Lawrence County. The submittal included a Compliance Assurance Monitoring (CAM) plan. A revised CAM plan was filed on April 20, 2006. The application was deemed administratively complete on September 11, 2004.

The Big Sandy Power Plant is a fossil fuel-fired electric generation facility that provides retail and wholesale electricity. The facility consists of two (2) coal-fired steam generators with a rated design capacity of 2512 MMBtu/hr (260 MW) and 7914 MMBtu/hr (800 MW), both with back-up #2 fuel oil capability, an oil-fired auxiliary boiler rated at 642 MMBtu/hr, various supporting operations including coal and ash handling, and various tanks with insignificant emissions.

PUBLIC AND U.S. EPA REVIEW:

On January 24, 2007, the public notice on availability of the draft permit and supporting material for comments by persons affected by the plant was published in *The Big Sandy News* published in Louisa, Kentucky. The public comment period expired 30 days from the date of publication.

Comments Received
Comments were received from American Electric Power on February 28, 2007. Minor changes were made to the permit as a result of the comments received, however, in no case were any emissions standards, or any monitoring, recordkeeping or reporting requirements relaxed. The changes are described in the Division's response to the comments. The U.S. EPA has 45 days to comment on this proposed permit.

Response to Comments

Comments from Patrick A. Dal Porto, Manager, Air Quality Services, Environmental Services, American Electric Power

Emissions Unit 01(01)

1. **AEP's Comment:** *Section 2a. This section lists the particulate limit as a "three-hour average". Such an averaging time does not exist in the current air permit, nor in any Kentucky or U.S. EPA regulation. 401 KAR61:015 Section 7, describes the performance tests required to demonstrate compliance with this limit. Specifically, it states that a "Reference Method 5 for the concentration of particulate matter and associated moisture content" is required for particulate compliance, with no specific averaging time. Furthermore, this unit was constructed prior to 8/17/71, and is subject to Kentucky Regulation No. 7. This regulation also does not specify an averaging time for particulate compliance. Although the EPA Reference Method 5 test consists of three 1-hour runs, the test is not completed in a three-hour period. Specifying an averaging time without an applicable regulation is not lawful and unnecessarily constrains this limit with respect to credible evidence. Thus, Kentucky Power requests the phrase, "based on a three-hour average" be removed from the permit. This comment also applies to Emissions Unit 02(02) and Emissions Unit 04(04).*

Division's Response: The Division does not agree. First, the applicant is in error in stating that this unit is subject to Kentucky Regulation No. 7. The applicable regulation is 401 KAR 61:015. Now, this regulation does state that:

> The emission limitations contained in other subsections of this section shall not apply to any affected facility (with more than 250 million BTU per hour heat input capacity which was in being or under construction before August 17, 1971, or any affected facility with 250 million BTU per hour capacity or less which was in being or under construction prior to April 9, 1972) if that affected facility was in compliance prior to April 9, 1972, with, or has a valid permit to operate within the provisions of the previous Kentucky Air Pollution Control Commission Regulation No. 7 entitled "Prevention and Control of Emissions of Particulate Matter from Combustion of Fuel in Indirect Heat Exchangers."

Therefore, while the emission limitations from the previous regulation are carried forward, the unit is subject to all applicable requirements of the current regulation 401 KAR 61:015 including the requirements of "Section 7. Test Methods and Procedures." that requires Method 5 as the compliance method. The minimum time that a Method 5 can be performed is three hours. In practice, Method 5 tests can be complete in slightly over three hours.

In the absence of a specified averaging time, the Division is aware that some advocates of regulatory enforcement have asserted that a regulation that does not specify an averaging time means that the standard is instantaneous. If this were to

be the case, than any COM reading or periodic monitoring parameter that is outside of the proper range could be considered a violation of the standard. However, the fact that the compliance test is based on three one-hour averages clearly indicates that longer averaging times are appropriate.

2. **AEP's Comment:** *Section 2.b.(ii) This section makes reference to a startup time that does not exceed manufacturer's recommendations. It should be noted that the manufacturer does not provide such timeframes, and that the operational requirements are not limited to the boiler. Utilities must also consider the operating conditions of the pollution control equipment during unit startup. Kentucky Power requests the verbiage "good engineering practices" to replace the reference to manufacturer's timeframes for both Emissions Unit 01(01) and Emissions Unit 02(02). In addition, the phrase "for emissions from an indirect heat exchanger" should be deleted from line two, as it is repetitive. This phrase does not appear for the same condition under Emissions Unit 02(02).*

   Division's Response: The Division does not agree, except with respect to deletion of the repetitive phrase. The above referenced language derives directly from the regulation. If AEP does not have the information required by the regulation, then it would be reasonable for the Division to consider alternative information that satisfies the intent of the regulation. Although AEP offered, in a subsequent comment, to submit a startup plan including typical historical startup times for the main boilers, it was not submitted with AEP's comments, so the Division is unable to determine if the plan adequately satisfies the regulation.

3. **AEP's Comment:** *Section 3e Big Sandy's current Title V permit requires a Reference Method 9 test on annual basis. The testing frequency proposed in this draft is bi-weekly, which is unclear as this can actually be interpreted as twice per week or every other week. This testing frequency has been discussed at length between the utility group and the KDAQ, and it was our understanding that KDAQ and KUIE agreed to a testing frequency of monthly (12 times more stringent than the current requirement). Increasing this requirement by at least 26 fold is not practical and not permitted without a regulatory amendment, as increasing the testing frequency is equivalent to increasing the stringency of the standard. Direct substitution of the COM as a compliance reading is not consistent with the Kentucky or U.S. EPA regulations and is not an acceptable alternative. This proposed permit already requires the source to take a Reference Method 9 after each exceedance of the COM. In addition, this condition makes no allowance for the times in which a Reference Method 9 could not be conducted, which is necessary for such a testing frequency due to weather and other related conditions. Kentucky Power strongly encourages the permit be revised to clarify these issues and revise the frequency to monthly.*

   Division's Response: This language has been modified to give 'credit' for Method 9 readings that occur in response to COM exceedances pursuant to Paragraph 4.a.(ii), and to make provision for when Method 9 readings are not possible.

4. **AEP's Comment:** <u>Section 4a(ii)</u> *As currently stated, this condition requires the source to determine opacity via Reference Method 9, inspect the control equipment, and initiate any repairs within 30 minutes of a COM exceedance. This condition would be impossible to comply with for Big Sandy plant, especially during afternoon hours when performing a valid Reference Method 9 requires the reader to conduct the test across the river, resulting in drive times occasionally exceeding 35 minutes due to traffic. Per the KDAQ's January 10, 2007 response to the KUIE comments, this language was to read, ' a Reference Method 9 test" within this timeframe. Such language would be acceptable to Kentucky Power, however it should be further clarified that both inspection of the control equipment and initiating repairs within 30 minutes is not intended, as such a timeframe would not be practical and often unnecessary as the episode may quickly cease. Furthermore, Kentucky Power believes that it is inconceivable and impractical to initiate a Reference Method 9 test for every 6-minute exceedence, noting in the past, that often by the time a Reference Method 9 can be conducted, the exceedence no longer exists. Direct substitution of the COM as a compliance reading is not consistent with the Kentucky or U.S. EPA regulations and is not an acceptable alternative. An acceptable alternative would be to initiate a Reference Method 9 within 30 minutes after the third consecutive 6-minute exceedance of the COM. Three consecutive 6-minute periods is more representative of an episode that requires further investigation and is representative of the approximate length of a Reference Method 9.*

   Division's Response: This language has been modified to address these concerns.

5. **AEP's Comment:** <u>Section 4b(ii)</u> *The parentheses in the first sentence is not closed.*

   Division's Response: This correction has been made.

6. **AEP's Comment:** <u>Section 4b(ii)</u> *Kentucky Power requests the language, ". . .perform a stack test in the following calendar quarter to demonstrate compliance..." be modified to "shall submit in the following calendar quarter a compliance test protocol. Testing shall be conducted per the protocol to demonstrate compliance with the particulate standard while operating at representative conditions."*

   401 KAR 50:045, Section 2 requires a source to submit a test protocol 60 days prior to the scheduled test date. If the source is required to complete the testing in the next calendar quarter, Kentucky Power must, as an example for a fourth quarter exceedance, submit the test protocol by January 30 and complete the test on March 31. Considering the 60-day protocol review period by KDAQ, this gives the source only 30 days to review the quarterly data, prepare the test protocol, submit the protocol, and one day at the end of the quarter to complete the testing. If KDAQ has any issues with the protocol that requires a re-submittal, the test could not be completed in the following quarter.

   Division's Response: The Division disagrees. It is highly likely that AEP will know before the end of a calendar quarter whether or not the COMS data is above

the 5 percent threshold. However, the Division may waive testing requirements. Therefore, if AEP is unable to complete required testing within the next calendar quarter, it should submit reasonable justification to the Division's Regional Office for approval.

7. **AEP's Comment:** *<u>Section 4c</u> There are two Section 4c's listed for Emissions Unit 01(01). In addition, the permit has several grammatical inconsistencies, such as some sub-sections displayed with a parentheses "b)' and others without "b".*

Division's Response: These corrections have been made.

8. **AEP's Comment:** *<u>Section 4h</u> This section requires action be taken if any 24-hour average sulfur dioxide value exceeds the standard. The current permit excludes periods of startup and shut down from this requirement, and there has been no regulatory change to justify removal of such language from the renewal permit. Kentucky Power requests this language be added back to the permit.*

Division's Response: The Division disagrees. 401 KAR 61:015 does not contain an exemption from the sulfur dioxide limit during startup or shutdown. Typically, fuel oil is used during startup and low sulfur fuel is readily available. Furthermore, the sulfur dioxide limit is based upon a 24-hour average, which should be ample time to average out higher than normal emissions during start-up. If a malfunction occurs during start up that result in excess sulfur dioxide emissions, AEP has the option to request an exemption pursuant to 401 KAR 50:055, Section 1(4).

9. **AEP's Comment:** *<u>Section 5c</u> While the permit language is not specific, it is assumed this section is referring to maintaining specific records for the electrostatic precipitators (ESP). Regardless, this requirement is not in the existing permit and there is no basis for adding this requirement to the renewal permit. The CAM plan approved for this facility does not include any parametric monitoring requirements for the ESP. Monitoring such parameters has inaccuracies recognized by industry due to difficulties correlating voltage and current levels to precipitator performance during changes in load, fuel characteristics, and humidity. This comment also applies to Emissions Unit 02(02).*

Division's Response: The Division disagrees. Paragraph 5c is the recordkeeping requirement associated with the monitoring requirement in Paragraph 4c. The Division assumes that AEP's objections relate to the monitoring requirement since resolution of the monitoring requirement obviates the recordkeeping requirement. Since AEP will be correlating opacity as measured by COM with PM emissions, Paragraph 4c has been modified to require ESP monitoring to ensure compliance with good pollution control practices only. It should be noted that AEP's CAM plan was not approved as filed as AEP asserts, but rather the permit reflects requirements necessary to satisfy the requirements of 40 CFR Part 64, Compliance Assurance Monitoring.

10. **AEP's Comment:** *Section 6a(ii) A typo exists in the first sentence of this section; "Owner operators" should be changed to "Owners or operators". The same comment applies to Emissions Unit 02(02).*

Division's Response: This correction has been made.

11. **AEP's Comment:** *Section 6b Emissions Unit 02(02) has a permit condition (in Section 6b) that appears to have been inadvertently excluded from Emissions Unit 01(01).*

Division's Response: This correction has been made.

12. **AEP's Comment:** *Section 6b Kentucky Power questions the environmental benefit and legal basis of the proposed new requirement to report startup type and duration identification. An extended startup period occurring on a generating unit does not necessarily indicate the unit has an extended period of opacity or other emission exceedance. Furthermore, it is not in the best economic interest of any utility to delay the unit from synchronization. Lastly, KDAQ has not formally defined when a startup begins or ends. Requiring additional non-emission related reporting for potentially short-term exceedances is neither prudent nor consistent with the existing regulations. When opacity or other emission exceedances occur during startup or any other periods of operation, such information is reported as required by the Kentucky regulations. As an alternative to this proposed requirement, Kentucky Power is willing to submit a startup plan to KDAQ including typical historic startup times for the main boilers. This comment also applies to Emissions Unit 02(02) and Emissions Unit 04(04).*

Division's Response: The Division disagrees. The Division is not requiring that information relating to startup be provided unless there is an exceedance of the emission limits. Paragraph 6b states in part "For exceedances that occur as a result of startup, the permittee shall report..." If AEP seeks an exemption from exceedances on the basis that the unit was in startup mode, it is reasonable to expect AEP to both support its claim that the unit was in startup and to provide sufficient information to ensure that the requirements of 401 KAR 50:055 Section 1(4) are met. This regulation states:

> (4) A source shall be relieved from compliance with the standards set forth by the cabinet if the director determines, **upon a showing by the owner or operator** (emphasis added) of the source, that:
> (a) The malfunction or shutdown and ensuing start-up did not result from the failure by the owner or operator of the source to operate and maintain properly the equipment;
> (b) All reasonable steps were taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the standards, including the use of off-shift labor and overtime if necessary;
> (c) All reasonable steps were taken to minimize the emissions and their effect on air quality resulting from the occurrence;
> (d) The excess emissions are not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and
> (e) The malfunction or shutdown and ensuing start-up was not caused entirely or in part by poor maintenance, careless operation or any other preventable upset conditions or equipment breakdown.

Therefore, Paragraph 6b simply specifies the minimum amount of information necessary to ensure that the above requirements have been met. The Division can request additional information if an owner or operator fails to make the showing required above when requesting an exemption for exceeding an emission limit.

Emissions Unit 02(02)

13. **AEP's Comment:** *Section 4d Emissions Unit 01(01) lists a requirement to have a CEM system to measure nitrogen oxide emissions, however, this requirement is excluded from Emissions Unit 02(02).*

Division's Response: This correction has been made.

14. **AEP's Comment:** *Section 5b(iii) We request the parenthetical statement in this section be changed to, "excluding exempted time periods", which will match the language for the same requirement for Emissions Unit 01(01).*

Division's Response: This correction has been made.

15. **AEP's Comment:** *Section 6a Emissions Unit 01(01) has a permit condition (in Section 6a(v)) that appears to have been inadvertently excluded from Emissions Unit 02(02).*

Division's Response: This correction has been made.

Emissions Unit 04(04)

16. **AEP's Comment:** *Section 2b This section makes reference to a startup time that does not exceed manufacturer's recommendations. It should be noted that the manufacturer does not provide such timeframes, and startup times for the aux boiler can vary greatly. Kentucky Power requests the verbiage "good engineering practices" to replace the reference to manufacturer's timeframes.*

Division's Response: Please see the response to Comment 2.

17. **AEP's Comment:** *Section 2c, 2d The requirements in these two sections appear to be duplicative, thus one should be deleted. In addition, this section makes reference to a startup time that does not exceed manufacturer's recommendations. It should be noted that the manufacturer does not provide such timeframes, and startup times for the aux boiler can vary greatly. Kentucky Power requests the verbiage "good engineering practices" to replace the reference to manufacturer's timeframes.*

Division's Response: The duplication has been eliminated. For the response related to startup, please see the response to Comment 2.

18. **AEP's Comment:** *Section 5b This section requires that we maintain the rate of fuel on a daily basis and the heating value and ash content on a weekly basis. The rate of fuel for the Aux boiler has historically been recorded on a weekly basis and there has been no regulatory change to justify an increase in stringency. Similarly, the heating value of fuel for the Aux boiler has historically been recorded on a monthly basis. Finally, the fuel vendor does not provide ash content of the fuel oil. Big Sandy burns only distillate oil in this unit (No. 1 or 2),*

which has a very low ash and sulfur content (0.01% ash max per ASTM). Big Sandy has no means of testing ash content of fuel oil on-site and does not understand the basis for adding this new requirement to the renewal permit. Since the ash content is very low, we recommend the following as alternative language, "(iii) the heating value and fuel oil type on a monthly basis". In addition, item (ii) should remain consistent with current requirements and be changed from recording rate of fuel burned daily to weekly.

Division's Response: The Division disagrees. 401 KAR 61:015 Section 6(3) states: "The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the indirect heat exchanger is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily." Paragraph 4b has been modified to be consistent with Paragraph 5b and the regulation.

Certification from the fuel supplier is still an acceptable method for determination of fuel characteristics. If ash content is unavailable, a copy of the ASTM along with verification from the fuel manufacturer that the fuel complies with the standard would suffice.

Emissions Unit 05(05)

19. **AEP's Comment:** *Section 4 This condition requires a Reference Method 9 if "emissions from any operation are visible". This requirement is more stringent with the current permit requirement to perform a Reference Method 9 if "visible emissions from any operation are believed to exceed the applicable standard". There has been no regulatory change or compliance issues with this source to justify an increase in the stringency of this monitoring requirement. Kentucky Power therefore requests this language be modified to remain consistent with the current Title V permit. As an alternative, the language could be modified to state, "If visible emissions appear to be higher than visible emissions routinely observed, the permittee shall determine the opacity of emissions by Reference Method 9."*

Division's Response: The Division disagrees. The phrase "are believed to exceed the applicable standard" has been problematical because it is subjective, and therefore, not enforceable as a practical matter. The revision proposed by AEP also does not appear enforceable as a practical matter, hence the permit language has not been changed to that requested by AEP. However, the Division recognizes the main purpose for the monitoring of coal handling equipment in this manner is to first identify malfunctioning equipment or controls, and second to quantify the extent of the emissions, in this case with Method 9 tests. The renewal permit has been revised to reflect this purpose and maintain objective language by only requiring equipment inspections when emissions are seen, and adding a second requirement to conduct Method 9 tests on that same affected facility where emissions are seen in two consecutive weeks..

20. **AEP's Comment:** *Section F. Section 1 A typo exists in this section, as there are two subsections listed as "a".*

Division's Response: This correction has been made.

21. **AEP's Comment:** *Section J. BSU1 The S02 allowance allocation for years 2006-2009 is 6430, which is due to a second reallocation of two allowances per year from U.S. EPA.*

BSU2 The S02 allowance allocation for years 2006-2009 is 19,718, which is due to a second reallocation of seven allowances per year from U.S. EPA.

Division's Response: The numbers listed in the permit reflect the numbers listed in 40 CFR 73.10(b). However, the numbers listed in the permit contain a note that says "The number of allowances allocated to Phase II affected units by U. S. EPA may change under 40 CFR Part 73. In addition, the number of allowances actually held by an affected source in a unit may differ from the number allocated by U.S.EPA. Neither of the aforementioned conditions necessitates a revision to the unit SO2 allowance allocations identified in this permit (See 40 CFR 72.84)."